

WHAT IS CLAIMED IS:

1. A method of augmenting activin-induced signaling
in a cell comprising the step of:

5 inhibiting the formation of inhibin/betaglycan complexes
on the surface of said cell.

2. The method of claim 1, wherein said formation of
10 inhibin/betaglycan complexes is inhibited with an anti-betaglycan
antiserum directed against an extracellular epitope of betaglycan.

3. The method of claim 1, wherein expression of
15 betaglycan in said cell is inhibited.

4. The method of claim 3, wherein expression of
betaglycan is inhibited by an antisense transcript of betaglycan.

5. The method of claim 3, wherein expression of betaglycan is inhibited by mutagenesis of at least one betaglycan alleles in said cell.

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6. The method of claim 5, wherein said betaglycan allele is mutated by homologous recombination.

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7. The method of claim 1, wherein said cell is a pituitary cell.

8. The method of claim 7, wherein augmentation of 15 activin signaling increases the production of Follicle Stimulating Hormone (FSH) by said cell.

9. The method of claim 8, wherein said method 20 enhances fertility.

10. The method of claim 1, wherein said augmentation of activin signaling alleviates a pathophysiological condition in said cell.

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11. The method of claim 10, wherein said pathophysiological condition is selected from the group consisting of reproductive, developmental, skin, bone, hepatic, hematopoietic and central nervous system disorders.

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12. The method of claim 11, wherein said pathophysiological condition is prostate cancer.

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13. An antiserum directed against the extracellular portion of betaglycan, wherein said antiserum inhibits inhibin binding to betaglycan.

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14. A pharmaceutical composition comprising the
antiserum of claim 13 and a pharmaceutical carrier.

5 15. A method of inhibiting activin-induced signaling in
a cell comprising the step of:

augmenting the formation of inhibin/betaglycan
complexes on the surface of said cell.

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16. The method of claim 15, wherein formation of said
inhibin/betaglycan complexes is augmented by increasing the
expression of betaglycan in said cell.

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17. The method of claim 16, further comprising the
step of administering additional inhibin to said cell.

18. The method of claim 16 wherein betaglycan expression is increased by transfecting said cell with an artificial construct containing a betaglycan gene.

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19. The method of claim 18, wherein said betaglycan gene is constitutively expressed.

10 20. The method of claim 18, wherein said betaglycan gene is expressed by an inducible promoter.

15 21. The method of claim 18, wherein said method is used to introduce increased sensitivity to inhibin in a cell in which activin signaling is not normally affected by inhibin.

20 22. The method of claim 15, wherein said inhibition of activin signaling alleviates a pathophysiological condition in said cell.

23. The method of claim 22, wherein said pathophysiological condition is selected from the group consisting of reproductive, developmental, skin, bone, hepatic, hematopoietic and central nervous system disorders.

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24. The method of claim 23, wherein said pathophysiological condition is selected from the group consisting of gonadal cancer, adrenal cancer, and liver dysplasia.

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25. The method of claim 23 used to promoter liver regeneration in a damaged liver.

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26. A method of screening for a compound which inhibits the formation of inhibin/betaglycan complexes to augment activin signaling comprising the steps of:

a) incubating membranes from betaglycan expressing cells in both the presence and absence of said compound;

b) performing an assay which measures the binding of inhibin to betaglycan;

5 c) comparing the results of said assay on cell incubated with said compound to untreated cells, wherein a compound which inhibits the formation of inhibin/betaglycan complexes will result in lower levels of inhibin binding.

27. The method of claim 26 wherein said compound 10 is selected from the group consisting of peptides, proteins, and small molecules.

28. The method of claim 26 wherein said assay is a 15 competition binding assay between labeled and unlabeled inhibin.

29. A compound identified by the method of claim 26.

30. A method of screening for a compound which augments the formation of inhibin/betaglycan complexes to inhibit activin signaling comprising the steps of:

- a) incubating membranes from betaglycan expressing cells in both the presence and absence of said compound;
- 5 b) performing an assay which measures the binding of inhibin to betaglycan.
- c) comparing the results of said assay on cells incubated with said compound to untreated cells, wherein a 10 compound which augments the formation of inhibin/betaglycan complexes will result in higher levels of inhibin binding.

31. The method of claim 30 wherein said compound is selected from the group consisting of peptides, proteins, and 15 small molecules.

32. The method of claim 30 wherein said assay is a competition binding assay between labeled and unlabeled inhibin.

20 33. A compound identified by the method of claim 30.